

RIC

KMK

curent FC 30/11
reportAPQ-56 IMPROVEMENT PROGRAM

(K)

4/23

4/17/57

SYSTEM

All 1.16 Resolution Problem - STAT
No change since last report.

XH-2 2.15 Recorder Cooling - STAT
XH-3 NAVY Same as report of 4/10/57.

XH-2 4.10 R. F. High Voltage Power Supply - STAT
XH-3 NAVY As a result of tests on sealing off the cracks exhibited by the potted "Stycast" R. F. units, the only solution at present is to use a thin coating of an isocyanate foam.
Results of temperature cycling on output voltage are, generally, fairly good (several different units were used to obtain a curve that would be typical of the units); however, results are inconclusive as of yet because of limited facilities and some unfortunate set backs.
In the coming week an output voltage, E_o , vs. temperature, $^{\circ}\text{C}$, curve will be drawn and the results of a foam covered unit should be fully evaluated.

All 6.16 P. E. Cell - STAT
Three P. E. Cell Test Sets are being built and tested to establish the sensitivity of P. E. Cells. All sets have been built. The previous internal voltage regulator is now being changed so as to be external to the test set. This will allow the tubes to operate at almost ambient temperature rather than at the internal temperature of the Test Set.

All 11.16 Quick Disconnect Waveguide - STAT
Parts are on hand or sufficient Mod Kits are being made to permit modification of all Time Shared equipments. All drawings pertaining to the above have been released. LAST REPORT.

All 12.16 Pulse Cable Connectors - STAT
Same as last report.

Time Shared 13.16 AGC - STAT
Design a new AGC that will be less susceptible to radio-frequency interference and stray audio pick-up.
Drafting has started the detail drawings for the new AGC.
The experimental model met all Test Specification limits.

SYSTEM

Time Shared 17.12 Wide Band Receiver - STAT
No work done on this project since last report.

All 19.12 Receiver Design - STAT
The configuration of stages for the video amplifier has been determined. Gamma correction, variable limit level and a non-linear characteristic have been incorporated into this design. The degree of non-linearity has not been determined as yet.
An evaluation of the receiver components in the present system is being undertaken. With this information the proper modification will be made in order to fulfill the receiver requirements.

All 20.9 Pulse Width - STAT
Tests have been run utilizing the hand tube modulator driving the 6799 magnetron with a rise time of approximately $.08 \mu s$, a pulse width of $.1 \mu s$ and a fall time of approximately $.2 \mu s$, an R.F. envelope of approximately $.12 \mu s$ was obtained. The rise and fall times of this pulse were in the order of $.04 \mu s$. The associated spectrum was reasonably symmetrical with a side lobe level, less than 10 db. It appears that there exists fundamental limiting factors in arriving at a square R.F. envelope. These are the rise and fall times of the magnetron voltage pulse. The minimum rise time requirement for proper starting is $.06 \mu s$ while the fall time, being determined by the interaction between the magnetron and modulator, is difficult to keep under about $0.2 \mu s$.
Investigation of the above phenomena will continue.

All 21.10 Pulse Width (Quick Fix) STAT
Same as last report.

All 22.8 Resolution Test Set STAT
A means of measuring recorder resolution is needed in the field. Eight Resolution Test Sets are being built by S. R. for the Time Shared System, using commercial type construction. Part of the circuitry is being tested in the lab. Construction is under way.

Time Shared 24.2 Deflection Driver Drift - STAT
XH-3 Navy All resistors in circuit have been checked for resistance change by substituting wire-wound for carbon and increasing wattage ratings or by direct cooling. These changes have resulted in no significant improvement, although minor changes may be occurring.
Drift voltage measurements indicate that difficulty arises in 6AU6 grid circuit or in tubes themselves. Changing 4X250B tubes results in changes of magnitude of drift across the 200-ohm cathode resistors, indicating that the drift is not totally unaffected by those tubes.

